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(54) Electronic mail message control system.

(57) An electronic mail system in which in a processing station messages are sorted according to a set of criteria established for particular users to allocate messages and to preferably order the sequence in which messages are presented to each user.

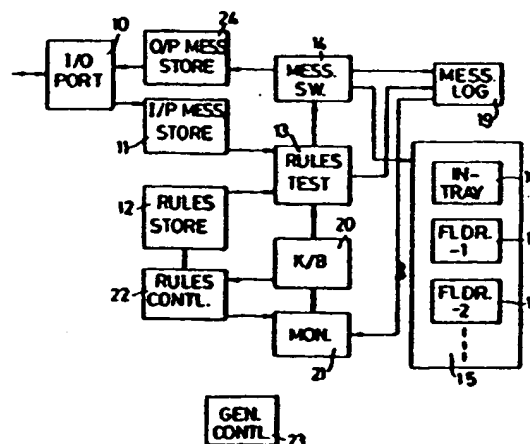


Fig. 1

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which holds them in readiness for processing by the rest of the apparatus. As will be explained later, the apparatus operates in accordance with a number of rules, and these are stored in a rules store 12. The messages are matched against the rules in a rules test unit 13, which controls a message switch 14. The messages stored in store 11 are passed through the message switch back to the IO port 10 for transmission to other work stations, and on to a main folder store 15; the folders include an in-tray folder 16 and other folders Folder-1 17, Folder-2 18, etc.

Information about the messages is also stored in a message log unit 19. A keyboard 20 enables the user to control the operation of the apparatus, and is coupled to a monitor 21 on which various operations, and the contents of the message log unit 19, can be displayed. A rules control unit 22 is coupled to the keyboard 20 and the rules store 12. This unit enables the user to generate new rules and modify existing rules; existing rules are extracted from the rules store 12 for this purpose, and new or modified rules are returned to that store.

### Operating modes

The apparatus may be operated in either continuous or batch mode, under control of a general control unit 23. This unit controls the remaining units of the apparatus, and also controls the mode of operation of the apparatus. The mode is selected by means of the keyboard 20.

In continuous mode, each message is processed as it is received. This involves applying all the rules in turn to the message, and taking the appropriate actions. In the batch mode, incoming messages are accumulated in the message store 11, and processed at selected times; the processing times may be preprogrammed into the system (e.g. at times 0845 and 1245, so that the processed messages are available for the user to deal with when they come in in the morning and back from lunch), or when demanded by the user.

In the case where the apparatus operates on demand from the user, it initially presents the user with an indication of the number of messages in the message store 11. The user can then select whether the apparatus shall operate in foreground mode (so that nothing else can be done until the message processing has been completed) or in background mode (so that the user can proceed with some other task, with the apparatus performing the message processing in the intervals in which that other task is not utilizing the resources of the work station).

both implicitly automatic. The apparatus can also be operated in a manual mode. For this, the apparatus presents the user with the proposed actions for each message, but awaits confirmation from them before performing those actions. For this, the apparatus preferably presents the proposed actions on the screen 21, so that the user can select the proposed actions one after another, e.g. by means of a cursor, for performance or not. It may be desirable for the screen to be split or windowed, so that the message can also be seen; the message is preferably scrollable on its part of the screen for this.

For this mode, the user may set the apparatus to process the messages automatically for the current batch (i.e. the current contents of the message store 11), but to revert to the manual mode thereafter.

If the user decides not to use the present apparatus, then the messages in the message store 11 are simply transferred directly to the in-tray folder 16. The user can then obtain an indexed listing of them, read them, and otherwise process them in conventional manner.

There is a further mode, intermediate between those described above, in which the apparatus operates but the only action taken is to assign priorities to the messages as they are passed from the message store 11 to the in-tray folder 16.

Means are also preferably provided whereby the user can pass a selected message from the in-tray to the rules test unit 13. This enables the user to determine what actions the rules recommend on a message which has reached the in-tray without those actions having already been performed.

To forward a message to another user, it is convenient to utilize a technique in which, from a formal point of view, a new message is constructed. This involves generating appropriate fields for the new message, the new addressee field indicating the user to which the message is to be forwarded and the new sender field indicating the user from whom it is being forwarded. This forwarding technique is known per se. The actual construction of the new message is performed by the message switch 14, which also performs other data processing functions such as appending priority levels to messages being passed to the in-tray folder 16.

The contents of the new subject field may depend on the mode of operation; if the mode is automatic, then the contents of the new subject field may be copied from the subject field of the original message; if the mode involves monitoring or participation by the user, then the system may offer the user the option of either inserting a new subject or having the contents of the old subject field copied. The body of the new message is

addressees; the three parts are for direct addressees, copy-to's, and total addressees (direct plus copy-to's). A user may wish to treat a message directed to a large number of addressees as of low importance, or more generally to treat a message differently depending on the number of direct and/or copy-to addressees.

- an addressees field 39. This contains a list of equivalent addressees. A user may wish to treat a message in different ways depending on who else it is addressed and/or copied to. Since the user may wish to treat direct addressees and copy-to's differently, each addressee in the list is tagged to indicate whether it is to be matched against direct addressees, copy-to's, or both.

- a keyphrase field 40. This contains a list of keyphrases which are to be matched against the contents of the message. Each keyphrase is tagged to indicate whether it is to be matched against subject field, message body fields, or both. The nature of the keyphrases and their matching is discussed in more detail later.

- a keyphrase zone limit field 41. This sets how much of the message body is used for the keyphrase matching. A user may want to look for a keyphrase anywhere in the entire message body, or they may prefer to limit the search for a keyphrase to the initial part of the message body.

The sub-units or fields of the actions part 35B of the rule storage unit 35 are as follows:

- a priority field 45. If the message matches the rule conditions, then it is given the priority level set by this field, which can have a value of between 1 (highest priority) and 5 (lowest priority).

- a file-to field 46. This contains a list of folders in the user's main folder store 15. If the message matches the rule conditions, then it is filed in the appropriate folders.

- a forward-to field 47. This contains a list of addressees; if the message matches the rule conditions, then it is forwarded to these addressees.

The work station may have a distribution list facility, by means of which the user can, when generating a message, enter the distribution list as a direct and/or copy-to addressee. If this facility exists, the apparatus may allow distribution lists to be used in the sender and addressees fields; such a distribution list will be treated as an indirect addressing of its list of addressees.

The rules storage units 35 in the rules store 12 are preferably subdivided into sets so that a plurality of different sets of rules can be stored, any one of which can be selected by the user. This will allow two different users to share the same work station, or a single user to use different rule sets at different times.

In practice, the storage units 25 and 35 and the

signing suitable regions in a general-purpose memory unit. This reduces the cost of the apparatus and allows memory space to be utilized effectively. This can be achieved by conventional techniques.

#### Operation - details

The message storage units 25 and the rules storage units 35 are coupled to the rules test unit 13 by coupling means, illustrated diagrammatically as 50 and 51, which select the various fields in succession. Corresponding fields are fed to a comparator unit 52 which makes comparisons of successive pairs of fields, and which is coupled to a latch unit 53 which stores the results (both intermediate and final) of the comparisons.

More specifically, comparator 52 first matches the sender field 26 with the addresses in the sender-list field 37. If there is no match, at this or any later stage, then the comparison with that rule is immediately terminated, and the next rule is selected. (Obviously the order of the various tests can be chosen for maximum efficiency; thus it may be preferable to perform this test after the next-described test. The order in which the tests are performed can even be made dependent on the contents of the fields, so that order in which the sender and addressee fields are tested depends on how many comparisons have to be made for each.)

If there is a match, then the comparator next counts the numbers of addresses in the addressees and copy-to's fields 28 and 29 and matches these with the limits set in the addressee limits field 38. The addresses in the fields 28 and 29 are then matched against those in the addressees list field 39.

If the matching so far has been successful, then the subject and body fields 30 and 31 are matched against the keyphrases field 40, under the control of the body-limit field 41. The keyphrases field may contain a number of keyphrases, each of which is made up of keywords which are treated as character strings for matching purposes. The keywords may be combined in logical combinations in the keyphrases. The comparator 52 first matches the individual keywords, and then evaluates the logical combinations to determine whether the keyphrase is satisfied.

Some of the fields in a rule may be left empty; such fields are in general treated as automatic matches. For example, if the sender-list field 37 is left empty, that field will be treated as matching all senders. Thus a rule can operate only on senders, only on keyphrase, or on both in combination.

If a rule is successfully matched, then the latches 53 are set to perform the actions stored in

a rules store (12) containing a plurality of rules relating to the status of received messages;

a rules test circuit (13) coupled to the message store (11) and to the rules store (12) and including comparison means (52) for comparing a message stored in the message store (11) with the rules to achieve a set of comparison results; and routing means (14) for routing each message to a location selected by the set of comparison results for that message.

2. A message processing station according to Claim 1 in which the rules in the rules store (12) can be partitioned into a plurality of sets, and means (20) for selecting any desired one of said sets for use by the rules test circuit (13).

3. A message processing station as claimed in Claim 2 in which the locations selectable by the routing means include a folder store (15) including a plurality of folders.

4. A message station as claimed in Claim 3 in which the folder store further includes an in tray (16).

5. A message processing station as claimed in Claim 4 in which the rules test circuit further allocates priorities to at least the message stored in the in tray and stores them in the in tray in order of priority.

6. A message processing station as claimed in Claim 1 in which the locations selectable by the routing means include other stations of the system.

7. A message processing station as claimed in Claim 1 in which the rules store (12) further includes rule control apparatus (22) by means of which the rules can be added, amended, and deleted.

8. A message processing station as claimed in Claim 7 in which each set of rules is defined in relation to the needs of a particular user of the system including a keyboard (20) connected to the rules control apparatus (22) each rule being able to be amended or deleted by a user by operation of the keyboard (20).

9. A message processing station according to Claim 2 in which each rule comprises a tests part (35A) and an actions part (35B), the tests part including one or more of

a sender list field (37) to be matched against the sender (26) of a message,

an addressee limits values field (38) to be matched against the number of addressees and/or copy to (28, 29) of the message,

an addressee list field (30) to be matched against the addressees (28) of the message,

a key-phrase field (40) to be matched against the body (31) of the message, and

a body-limits field (41), associated with the key-

field is matched.

and the actions part being operative on the message matching the tests part and including a priority value (45) for assigning to the message, and#

a location determining sub-part (46, 47) which determines the location to which the message is to be routed by the routing means (14).

10. A message processing station according to Claim 9 wherein the location determining sub-part of the actions part of the rule includes a file-to field (46) which determines which folder or folders (17, 18) of a folder store (15) the message is sent to.

11. A message processing station according to Claim 9 wherein the location determining sub-part of the actions part of the rule includes a forward-to field (47) which other stations of the system the message is to be sent to.

12. A method of controlling messages in an electronic mail system comprising a plurality of stations between which messages can be sent, the method including the steps of:

receiving and storing an incoming message (10, 11);

comparing the stored incoming message with a plurality of rules (13) to produce a set of comparison results for the message;

allocating at least one location (15) for subsequent storage of the message in accordance with the comparison results for that message.

13. A method of sorting messages in an electronic mail system as claimed in Claim 8 in which each message of a plurality of received messages is allocated an importance priority in accordance with the results of the comparison of each of the messages with the rules.

14. An electronic mail system comprising a plurality of stations between which messages can be sent, and including classification means in each station which assigns different priorities to the messages in dependence on matching of each message to a set of criteria defined by a set of rules, in which each station includes a message store for accumulating incoming messages and in which the classification means are adapted to operate on the messages so accumulated in the message store to effectively order the sequence in which the messages are presented to the user without changing the messages themselves.

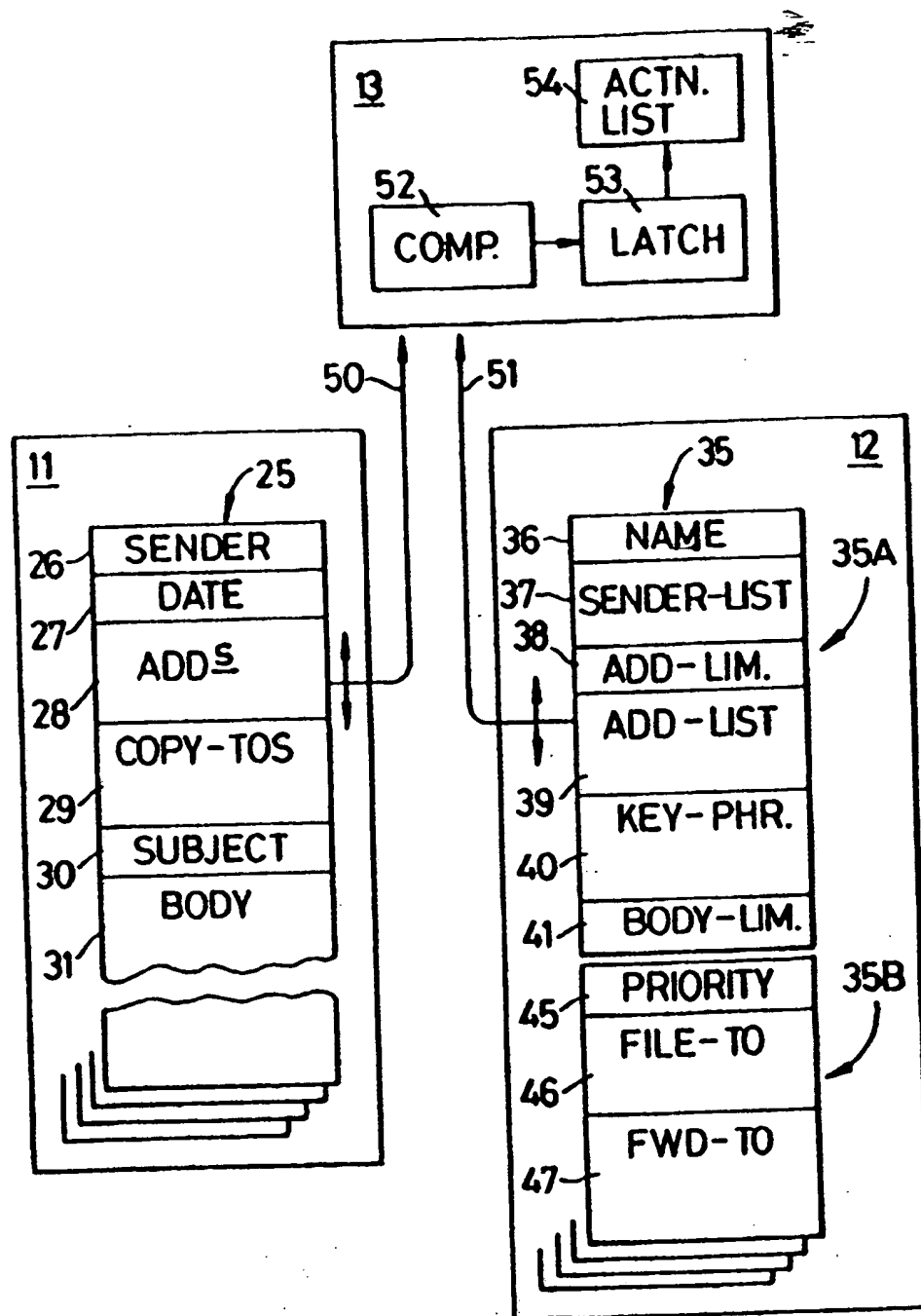


Fig. 2